276687
DILM9-10(110V50HZ,120V60HZ)

Overview | Specifications | Resources

DELIVERY PROGRAM

Product range
Contactors

Application
Contactors for Motors

Subrange
Contactors up to 170 A, 3 pole

Utilization category
AC-1: Non-inductive or slightly inductive loads, resistance furnaces
AC-3/AC-3e: Normal AC induction motors: Starting, switching off while running
AC-4: Normal AC induction motors: starting, plugging, reversing, inching

IE3

Notes
Also suitable for motors with efficiency class IE3.

Connection technique
Screw terminals

Number of poles
3 pole

Rated operational current

AC-3
Notes
At maximum permissible ambient temperature
(open.)
Also tested according to AC-3e.

AC-3
380 V 400 V [I_e]
9 A

AC-1
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 40 °C [$I_{th} = I_e$]
22 A

AC-1
Conventional free air thermal current, 3 pole, 50 -
60 Hz
enclosed [I_{th}]
18 A

AC-1
Conventional free air thermal current, 1 pole
open [I_{th}]
50 A

AC-1
Conventional free air thermal current, 1 pole
enclosed [I_{th}]
45 A

Max. rating for three-phase motors, 50 - 60 Hz

AC-3
220 V 230 V [P]
2.5 kW

AC-3
380 V 400 V [P]
4 kW

AC-3
660 V 690 V [P]
4.5 kW

AC-4
220 V 230 V [P]
1.5 kW

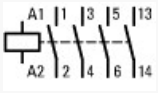
AC-4
380 V 400 V [P]
2.5 kW

AC-4
660 V 690 V [P]
3.6 kW

Contacts

N/O = Normally open
1 N/O

Contact sequence



Instructions
Contacts to EN 50 012.

Can be combined with auxiliary contact
DILM32-XHI…
DILA-XHI(V)…

Actuating voltage
110 V 50 Hz, 120 V 60 Hz

Voltage AC/DC
AC operation

Connection to SmartWire-DT
no

Frame size
1

TECHNICAL DATA

General

Standards
IEC/EN 60947, VDE 0660, UL, CSA

Lifespan, mechanical
AC operated [Operations]
10×10^6

Operating frequency, mechanical
AC operated [Operations/h]
9000

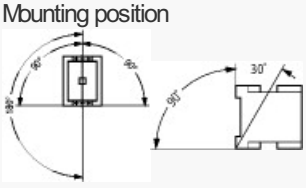
Climatic proofing
Damp heat, constant, to IEC 60068-2-78
Damp heat, cyclic, to IEC 60068-2-30

Ambient temperature
Open
-25 - +60 °C

Ambient temperature
Enclosed
- 25 - 40 °C

Ambient temperature
Storage
- 40 - 80 °C

Mounting position



Mechanical shock resistance (IEC/EN 60068-2-27)
Half-sinusoidal shock, 10 ms
Main contacts
N/O contact

10 g

Mechanical shock resistance (IEC/EN 60068-2-27)
Half-sinusoidal shock, 10 ms
Auxiliary contacts
N/O contact
7 g

Mechanical shock resistance (IEC/EN 60068-2-27)
Half-sinusoidal shock, 10 ms
Auxiliary contacts
N/C contact
5 g

Mechanical shock resistance (IEC/EN 60068-2-27)
when tabletop-mounted
Half-sinusoidal shock, 10 ms
Main contacts
N/O contact
5.7 g

Mechanical shock resistance (IEC/EN 60068-2-27)
when tabletop-mounted
Half-sinusoidal shock, 10 ms
Auxiliary contacts
N/O contact
3.4 g

Mechanical shock resistance (IEC/EN 60068-2-27)
when tabletop-mounted
Half-sinusoidal shock, 10 ms
Auxiliary contacts
N/C contact
3.4 g

Degree of Protection
IP20

Protection against direct contact when actuated from front (EN 50274)
Finger and back-of-hand proof

Altitude
Max. 2000 m

Weight
AC operated
0.24 kg

Screw connector terminals

Terminal capacity main cable
Solid
1 x (0.75 - 4)
2 x (0.75 - 2.5) mm²

Screw connector terminals
Terminal capacity main cable
Flexible with ferrule
1 x (0.75 - 2.5)
2 x (0.75 - 2,5) mm²

Screw connector terminals
Terminal capacity main cable
Solid or stranded
single 18 - 10, double 18 - 14 AWG

Screw connector terminals
Terminal capacity main cable
Stripping length
10 mm

Screw connector terminals
Terminal capacity main cable
Terminal screw
M3.5

Screw connector terminals
Terminal capacity main cable
Tightening torque
1.2 Nm

Screw connector terminals
Terminal capacity main cable
Tool
Pozidriv screwdriver
2 Size

Screw connector terminals
Terminal capacity main cable
Tool
Standard screwdriver
0.8 x 5.5
1 x 6 mm

Screw connector terminals
Terminal capacity control circuit cables
Solid
1 x (0.75 - 4)
2 x (0.75 - 2.5) mm²

Screw connector terminals
Terminal capacity control circuit cables

Flexible with ferrule
1 x (0.75 - 2.5)
2 x (0.75 - 2.5) mm^2

Screw connector terminals
Terminal capacity control circuit cables
Solid or stranded
18 - 14 AWG

Screw connector terminals
Terminal capacity control circuit cables
Stripping length
10 mm

Screw connector terminals
Terminal capacity control circuit cables
Terminal screw
M3.5

Screw connector terminals
Terminal capacity control circuit cables
Tightening torque
1.2 Nm

Screw connector terminals
Terminal capacity control circuit cables
Tool
Pozidriv screwdriver
2 Size

Screw connector terminals
Terminal capacity control circuit cables
Tool
Standard screwdriver
0.8 x 5.5
1 x 6 mm

Main conducting paths

Rated impulse withstand voltage [U_{imp}]
8000 V AC

Overvoltage category/pollution degree
III/3

Rated insulation voltage [U_i]
690 V AC

Rated operational voltage [U_e]
690 V AC

Safe isolation to EN 61140
between coil and contacts
400 V AC

Safe isolation to EN 61140
between the contacts
400 V AC

Making capacity (p.f. to IEC/EN 60947) [Up to 690 V]
112 A

Breaking capacity
220 V 230 V
90 A

Breaking capacity
380 V 400 V
90 A

Breaking capacity
500 V
70 A

Breaking capacity
660 V 690 V
50 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “2” coordination
400 V [gG/gL 500 V]
20 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “2” coordination
690 V [gG/gL 690 V]
16 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “1” coordination
400 V [gG/gL 500 V]
35 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “1” coordination
690 V [gG/gL 690 V]
20 A

AC

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 - 60 Hz
Open
at 40 °C [$I_{th} = I_e$]
22 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 - 60 Hz
Open
at 50 °C [$I_{th} = I_e$]
21 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 - 60 Hz
Open
at 55 °C [$I_{th} = I_e$]
21 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 - 60 Hz
Open
at 60 °C [$I_{th} = I_e$]
20 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 - 60 Hz
enclosed [I_{th}]
18 A

AC-1
Rated operational current
Conventional free air thermal current, 1 pole
open [I_{th}]
50 A

AC-1
Rated operational current
Conventional free air thermal current, 1 pole enclosed [I_{th}]
45 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
Notes
At maximum permissible ambient temperature (open.)
Also tested according to AC-3e.

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
220 V 230 V [I_e]
9 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
240 V [I_e]
9 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
380 V 400 V [I_e]
9 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
415 V [I_e]
9 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
440V [I_e]
9 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
500 V [I_e]
7 A

AC-3
Rated operational current

Open, 3-pole: 50 – 60 Hz
660 V 690 V [I_e]
5 A

AC-3
Motor rating [P]
220 V 230 V [P]
2.5 kW

AC-3
Motor rating [P]
240V [P]
3 kW

AC-3
Motor rating [P]
380 V 400 V [P]
4 kW

AC-3
Motor rating [P]
415 V [P]
5.5 kW

AC-3
Motor rating [P]
440 V [P]
5.5 kW

AC-3
Motor rating [P]
500 V [P]
4.5 kW

AC-3
Motor rating [P]
660 V 690 V [P]
4.5 kW

AC-4
Open, 3-pole: 50 – 60 Hz
220 V 230 V [I_e]
6 A

AC-4
Open, 3-pole: 50 – 60 Hz
240 V [I_e]
6 A

AC-4

Open, 3-pole: 50 – 60 Hz
380 V 400 V [I_e]
6 A

AC-4
Open, 3-pole: 50 – 60 Hz
415 V [I_e]
6 A

AC-4
Open, 3-pole: 50 – 60 Hz
440 V [I_e]
6 A

AC-4
Open, 3-pole: 50 – 60 Hz
500 V [I_e]
5 A

AC-4
Open, 3-pole: 50 – 60 Hz
660 V 690 V [I_e]
4.5 A

AC-4
Motor rating [P]
220 V 230 V [P]
1.5 kW

AC-4
Motor rating [P]
240 V [P]
1.6 kW

AC-4
Motor rating [P]
380 V 400 V [P]
2.5 kW

AC-4
Motor rating [P]
415 V [P]
2.8 kW

AC-4
Motor rating [P]
440 V [P]
3 kW

AC-4

Motor rating [P]
500 V [P]
2.8 kW

AC-4
Motor rating [P]
660 V 690 V [P]
3.6 kW

DC

Rated operational current, open
DC-1
60 V [I_e]
20 A

Rated operational current, open
DC-1
110 V [I_e]
20 A

Rated operational current, open
DC-1
220 V [I_e]
15 A

Current heat loss

3 pole, at I_{th} (60°)
3 W

Current heat loss at I_e to AC-3/400 V
0.6 W

Impedance per pole
2.5 mΩ

Magnet systems

Voltage tolerance
AC operated [Pick-up]
0.8 - 1.1 x U_c

Voltage tolerance
Drop-out voltage AC operated [Drop-out]
0.3 - 0.6 x U_c

Power consumption of the coil in a cold state and
1.0 x U_S
50 Hz [Pick-up]
24 VA

Power consumption of the coil in a cold state and
1.0 x U_S
50 Hz [Sealing]
3.4 VA

Power consumption of the coil in a cold state and
1.0 x U_S
50 Hz [Sealing]
1.4 W

Power consumption of the coil in a cold state and
1.0 x U_S
60 Hz [Pick-up]
30 VA

Power consumption of the coil in a cold state and
1.0 x U_S
60 Hz [Sealing]
4.4 VA

Power consumption of the coil in a cold state and
1.0 x U_S
60 Hz [Sealing]
1.4 W

Duty factor
100 % DF

Changeover time at 100 % U_S (recommended value)
Main contacts
AC operated
Closing delay
15 - 21 ms

Changeover time at 100 % U_S (recommended value)
Main contacts
AC operated
Opening delay
9 - 18 ms

Changeover time at 100 % U_S (recommended value)
Arcing time

10 ms

Electromagnetic compatibility (EMC)

Emitted interference
to EN 60947-1

Interference immunity
to EN 60947-1

Rating data for approved types

Switching capacity
Maximum motor rating
Three-phase
200 V
208 V
3 HP

Switching capacity
Maximum motor rating
Three-phase
230 V
240 V
3 HP

Switching capacity
Maximum motor rating
Three-phase
460 V
480 V
5 HP

Switching capacity
Maximum motor rating
Three-phase
575 V
600 V
7.5 HP

Switching capacity
Maximum motor rating
Single-phase
115 V
120 V
0.5 HP

Switching capacity
Maximum motor rating
Single-phase

230 V
240 V
1.5 HP

Switching capacity
General use
20 A

Auxiliary contacts
Pilot Duty
AC operated
A600

Auxiliary contacts
Pilot Duty
DC operated
P300

Auxiliary contacts
General Use
AC
600 V

Auxiliary contacts
General Use
AC
10 A

Auxiliary contacts
General Use
DC
250 V

Auxiliary contacts
General Use
DC
1 A

Short Circuit Current Rating
Basic Rating
SCCR
5 kA

Short Circuit Current Rating
Basic Rating
max. Fuse
45 A

Short Circuit Current Rating
Basic Rating

max. CB
60 A

Short Circuit Current Rating
480 V High Fault
SCCR (fuse)
30/100 kA

Short Circuit Current Rating
480 V High Fault
max. Fuse
25 Class RK5/20 Class J A

Short Circuit Current Rating
480 V High Fault
SCCR (CB)
65 kA

Short Circuit Current Rating
480 V High Fault
max. CB
16 A

Short Circuit Current Rating
600 V High Fault
SCCR (fuse)
30/100 kA

Short Circuit Current Rating
600 V High Fault
max. Fuse
25 Class RK5/20 Class J A

Special Purpose Ratings
Electrical Discharge Lamps (Ballast)
480V 60Hz 3phase, 277V 60Hz 1phase
18 A

Special Purpose Ratings
Electrical Discharge Lamps (Ballast)
600V 60Hz 3phase, 347V 60Hz 1phase
18 A

Special Purpose Ratings
Incandescent Lamps (Tungsten)
480V 60Hz 3phase, 277V 60Hz 1phase
14 A

Special Purpose Ratings
Incandescent Lamps (Tungsten)

600V 60Hz 3phase, 347V 60Hz 1phase
14 A

Special Purpose Ratings
Resistance Air Heating
480V 60Hz 3phase, 277V 60Hz 1phase
18 A

Special Purpose Ratings
Resistance Air Heating
600V 60Hz 3phase, 347V 60Hz 1phase
18 A

Special Purpose Ratings
Refrigeration Control (CSA only)
LRA 480V 60Hz 3phase
60 A

Special Purpose Ratings
Refrigeration Control (CSA only)
FLA 480V 60Hz 3phase
10 A

Special Purpose Ratings
Refrigeration Control (CSA only)
LRA 600V 60Hz 3phase
60 A

Special Purpose Ratings
Refrigeration Control (CSA only)
FLA 600V 60Hz 3phase
10 A

Special Purpose Ratings
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)
LRA 480V 60Hz 3phase
54 A

Special Purpose Ratings
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)
FLA 480V 60Hz 3phase
9 A

Special Purpose Ratings
Elevator Control
200V 60Hz 3phase
2 HP

Special Purpose Ratings
Elevator Control
200V 60Hz 3phase
7.8 A

Special Purpose Ratings
Elevator Control
240V 60Hz 3phase
2 HP

Special Purpose Ratings
Elevator Control
240V 60Hz 3phase
6.8 A

Special Purpose Ratings
Elevator Control
480V 60Hz 3phase
3 HP

Special Purpose Ratings
Elevator Control
480V 60Hz 3phase
4.8 A

Special Purpose Ratings
Elevator Control
600V 60Hz 3phase
5 HP

Special Purpose Ratings
Elevator Control
600V 60Hz 3phase
6.1 A

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

Rated operational current for specified heat dissipation [I_n]
9 A

Heat dissipation per pole, current-dependent [P_{vid}]
0.2 W

Equipment heat dissipation, current-dependent [P_{vid}]
0 W

Static heat dissipation, non-current-dependent [P_{vs}]
1.4 W

Heat dissipation capacity [P_{diss}]
0 W

Operating ambient temperature min.
-25 °C

Operating ambient temperature max.
+60 °C

IEC/EN 61439 design verification

10.2 Strength of materials and parts
10.2.2 Corrosion resistance
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.1 Verification of thermal stability of enclosures
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.2 Verification of resistance of insulating materials to normal heat
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.4 Resistance to ultra-violet (UV) radiation
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.5 Lifting
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts
10.2.6 Mechanical impact
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts
10.2.7 Inscriptions
Meets the product standard's requirements.

10.3 Degree of protection of ASSEMBLIES
Does not apply, since the entire switchgear needs to be evaluated.

10.4 Clearances and creepage distances
Meets the product standard's requirements.

10.5 Protection against electric shock
Does not apply, since the entire switchgear needs to be evaluated.

10.6 Incorporation of switching devices and components
Does not apply, since the entire switchgear needs to be evaluated.

10.7 Internal electrical circuits and connections
Is the panel builder's responsibility.

10.8 Connections for external conductors
Is the panel builder's responsibility.

10.9 Insulation properties
10.9.2 Power-frequency electric strength
Is the panel builder's responsibility.

10.9 Insulation properties
10.9.3 Impulse withstand voltage
Is the panel builder's responsibility.

10.9 Insulation properties
10.9.4 Testing of enclosures made of insulating material
Is the panel builder's responsibility.

10.10 Temperature rise
The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.

10.11 Short-circuit rating
Is the panel builder's responsibility. The specifications for the switchgear must be observed.

10.12 Electromagnetic compatibility
Is the panel builder's responsibility. The specifications for the switchgear must be observed.

10.13 Mechanical function
The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

TECHNICAL DATA ETIM 7.0

Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss10.0.1-27-37-10-03 [AAB718015])

Rated control supply voltage Us at AC 50HZ
110 - 110 V

Rated control supply voltage Us at AC 60HZ
120 - 120 V

Rated control supply voltage Us at DC
0 - 0 V

Voltage type for actuating
AC

Rated operation current Ie at AC-1, 400 V
22 A

Rated operation current Ie at AC-3, 400 V
9 A

Rated operation power at AC-3, 400 V
4 kW

Rated operation current Ie at AC-4, 400 V
6 A

Rated operation power at AC-4, 400 V
2.5 kW

Rated operation power NEMA
3.7 kW

Modular version
No

Number of auxiliary contacts as normally open contact
1

Number of auxiliary contacts as normally closed contact
0

Type of electrical connection of main circuit
Screw connection

Number of normally closed contacts as main contact
0

Number of main contacts as normally open contact
3

APPROVALS

Product Standards
IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CE marking

UL File No.
E29096

UL Category Control No.
NLDX

CSA File No.
012528

CSA Class No.
2411-03, 3211-04

North America Certification
UL listed, CSA certified

Specially designed for North America
No

CHARACTERISTICS

Accessories
1: Overload relay
2: Suppressor
3: Auxiliary contact modules

Characteristic curve

Squirrel-cage motor
Operating characteristics
Starting:from rest
Stopping:after attaining full running speed
Electrical characteristics
Make: up to 6 x rated motor current
Break: up to 1 x rated motor current
Utilization category
100 % AC-3
Typical applications
Compressors
Lifts
Mixers
Pumps
Escalators
Agitators
Fans
Conveyor belts
Centrifuges
Hinged flaps
Bucket-elevators
Air conditioning system
General drives in manufacturing and processing machines

Characteristic curve

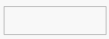
Extreme switching duty
Squirrel-cage motor
Operating characteristics
Inching, plugging, reversing
Electrical characteristics
Make: up to 6 x rated motor current
Break: up to 6 x rated motor current
Utilization category
100 % AC-4
Typical applications
Printing presses
Wire-drawing machines
Centrifuges
Special drives for manufacturing and processing machines

Characteristic curve

Switching conditions for non-motor consumers, 3 pole, 4 pole
Operating characteristics
Non inductive and slightly inductive loads
Electrical characteristics
Switch on: 1 x rated operational current
Switch off: 1 x rated operational current
Utilization category
100 % AC-1
Typical examples of application
Electric heat

DIMENSIONS

Contactor with auxiliary contact module DILM32-XHI.../DILA-XHI...



Contactor with auxiliary contact module DILA-XHIT…